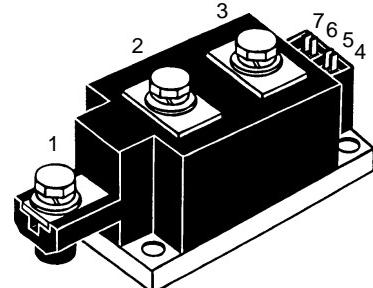


Thyristor Modules

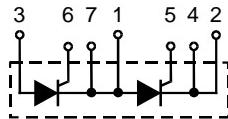
Thyristor/Diode Modules

I_{TRMS} = 2x 400 A
I_{TAVM} = 2x 221 A
V_{RRM} = 1200-1800 V

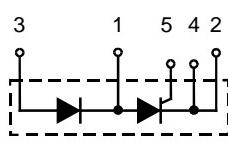
V _{RSM} V _{DSM} V	V _{RRM} V _{DRM}	Type
1300	1200	MCC 225-12io1
1500	1400	MCC 225-14io1
1700	1600	MCC 225-16io1
1900	1800	MCC 225-18io1
		MCD 225-12io1
		MCD 225-14io1
		MCD 225-16io1
		MCD 225-18io1



MCC



MCD



Symbol	Test Conditions	Maximum Ratings		
I _{TRMS}	T _{VJ} = T _{VJM}	400	A	
I _{TAVM}	T _C = 85°C; 180° sine	221	A	
I _{TSM} , I _{FSM}	T _{VJ} = 45°C; V _R = 0	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	8000 8500	A A
	T _{VJ} = T _{VJM} V _R = 0	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	7000 7700	A A
$\int i^2 dt$	T _{VJ} = 45°C V _R = 0	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	320 000 300 000	A ² s A ² s
	T _{VJ} = T _{VJM} V _R = 0	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	245 000 246 000	A ² s A ² s
(di/dt) _{cr}	T _{VJ} = T _{VJM} f = 50 Hz, t _p = 200 μs V _D = 2/3 V _{DRM} I _G = 1 A, di _G /dt = 1 A/μs	repetitive, I _T = 750 A non repetitive, I _T = I _{TAVM}	100 500	A/μs A/μs
(dv/dt) _{cr}	T _{VJ} = T _{VJM} ; V _{DR} = 2/3 V _{DRM} R _{GR} = ∞; method 1 (linear voltage rise)		1000	V/μs
P _{GM}	T _{VJ} = T _{VJM} I _T = I _{TAVM}	t _p = 30 μs t _p = 500 μs	120 60 20 10	W W W V
P _{GAV}			-40...+130	°C
V _{RGM}			130	°C
T _{VJ}			-40...+125	°C
T _{VJM}				
T _{stg}				
V _{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I _{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M _d	Mounting torque (M6) Terminal connection torque (M8)		4.5-7/40-62 Nm/lb.in 11-13/97-115 Nm/lb.in	
Weight	Typical including screws		750	g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
 IXYS reserves the right to change limits, test conditions and dimensions

Features

- International standard package
- Direct copper bonded Al₂O₃-ceramic with copper base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered E 72873
- Keyed gate/cathode twin pins

Applications

- Motor control, softstarter
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Solid state switches

Advantages

- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

Symbol	Test Conditions	Characteristic Values	
I_{RRM}, I_{DRM}	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	40	mA
V_T, V_F	$I_T, I_F = 600 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.40	V
V_{TO}	For power-loss calculations only ($T_{VJ} = 130^\circ\text{C}$)	0.8	V
r_T		0.76	$\text{m}\Omega$
V_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	2	V
	$T_{VJ} = -40^\circ\text{C}$	3	V
I_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	150	mA
	$T_{VJ} = -40^\circ\text{C}$	220	mA
V_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	0.25	V
I_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	10	mA
I_L	$T_{VJ} = 25^\circ\text{C}; t_p = 30 \mu\text{s}; V_D = 6 \text{ V}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	200	mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	150	mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 1 \text{ A}; di_G/dt = 1 \text{ A}/\mu\text{s}$	2	μs
t_q	$T_{VJ} = T_{VJM}; I_T = 300 \text{ A}, t_p = 200 \mu\text{s}; -di/dt = 10 \text{ A}/\mu\text{s}$ $V_R = 100 \text{ V}; dv/dt = 50 \text{ V}/\mu\text{s}; V_D = 2/3 V_{DRM}$	typ.	200 μs
Q_s	$T_{VJ} = 125^\circ\text{C}; I_T, I_F = 300 \text{ A}; -di/dt = 50 \text{ A}/\mu\text{s}$	550	μC
I_{RM}		235	A
R_{thJC}	per thyristor (diode); DC current	0.157	K/W
	per module	0.08	K/W
R_{thJK}	per thyristor (diode); DC current	0.197	K/W
	per module	0.1	K/W
d_s	Creeping distance on surface	12.7	mm
d_A	Creepage distance in air	9.6	mm
a	Maximum allowable acceleration	50	m/s^2

Optional accessories for modules

Keyed Gate/Cathode twin plugs with wire length = 350 mm, gate = yellow, cathode = red

Type **ZY 180 L** (L = Left for pin pair 4/5) } UL 758, style 1385,

Type **ZY 180 R** (R = Right for pin pair 6/7) } CSA class 5851, guide 460-1-1

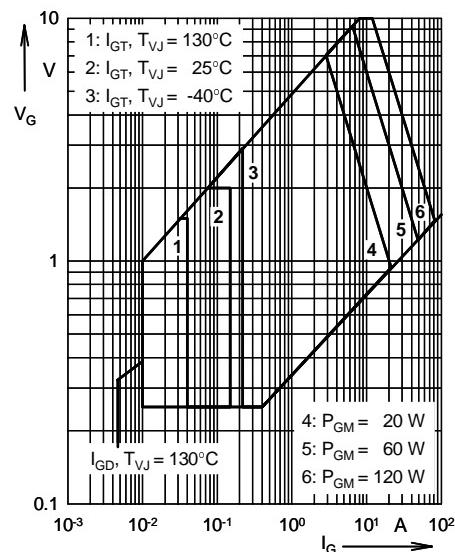


Fig. 1 Gate trigger characteristics

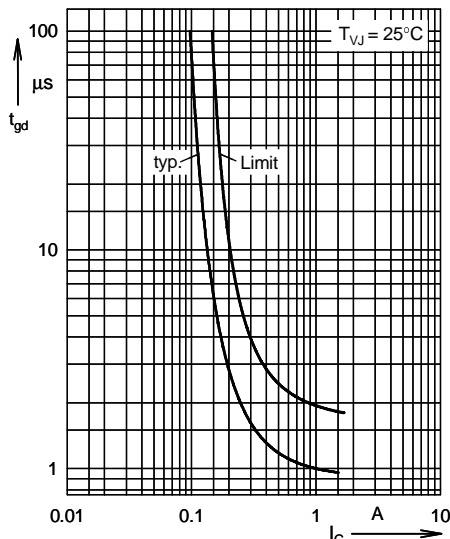
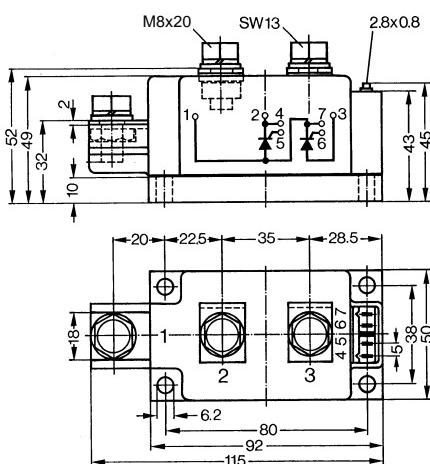


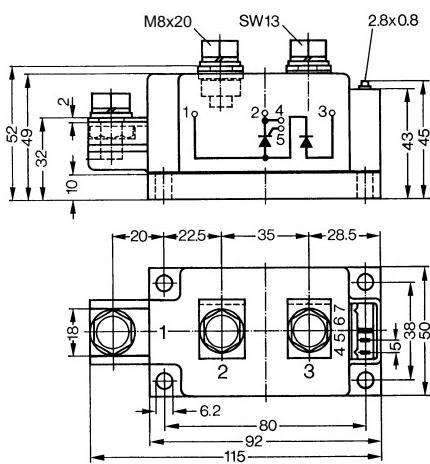
Fig. 2 Gate trigger delay time

Dimensions in mm (1 mm = 0.0394")

MCC



MCD



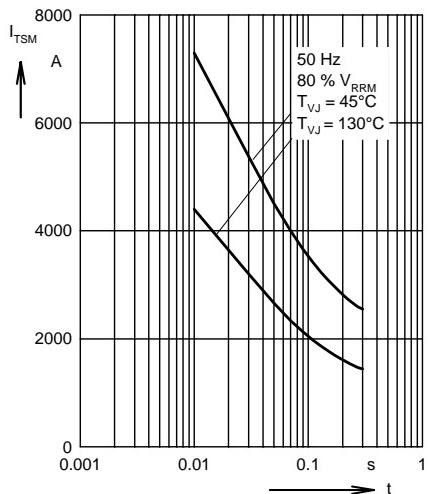


Fig. 3 Surge overload current
 I_{TSM}, I_{FSM} : Crest value, t : duration

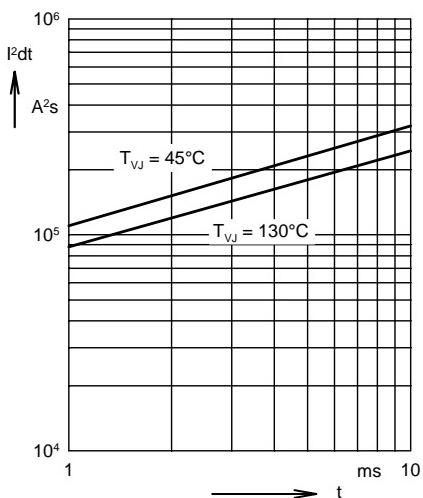


Fig. 4 $\int I^2 dt$ versus time (1-10 ms)

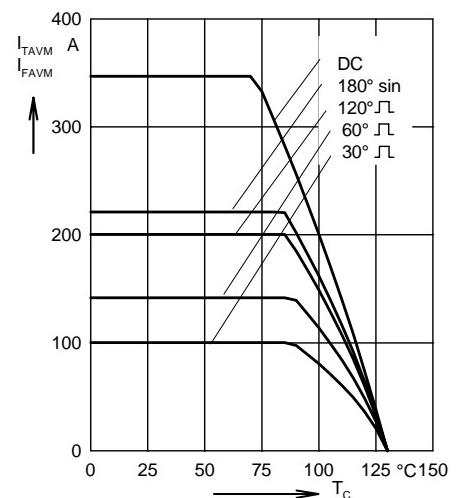


Fig. 4a Maximum forward current at case temperature

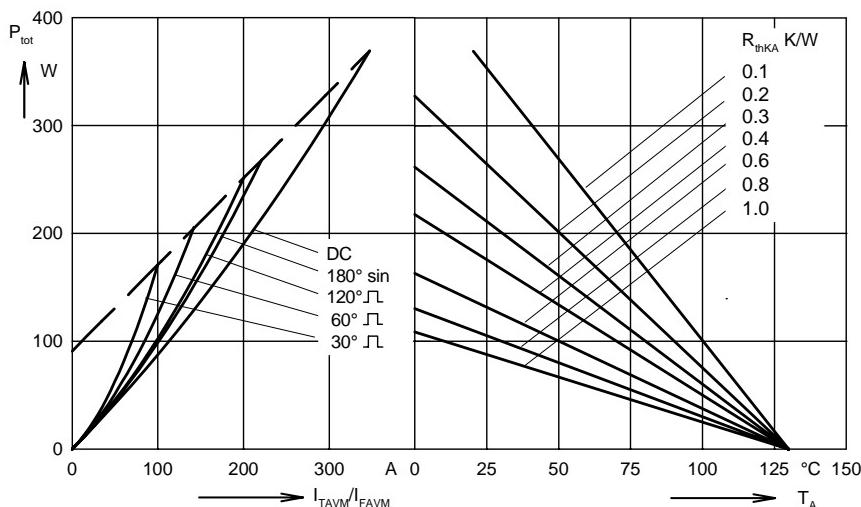


Fig. 5 Power dissipation versus on-state current and ambient temperature (per thyristor or diode)

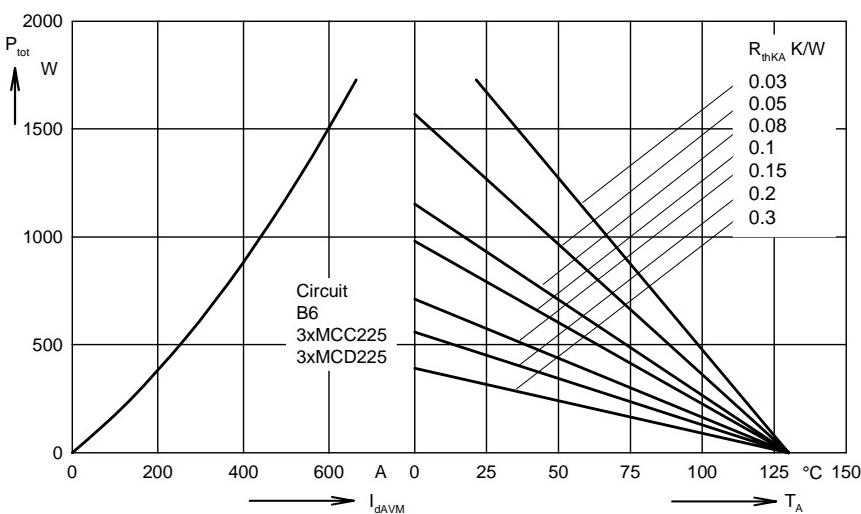


Fig. 6 Three phase rectifier bridge:
Power dissipation versus direct output current and ambient temperature

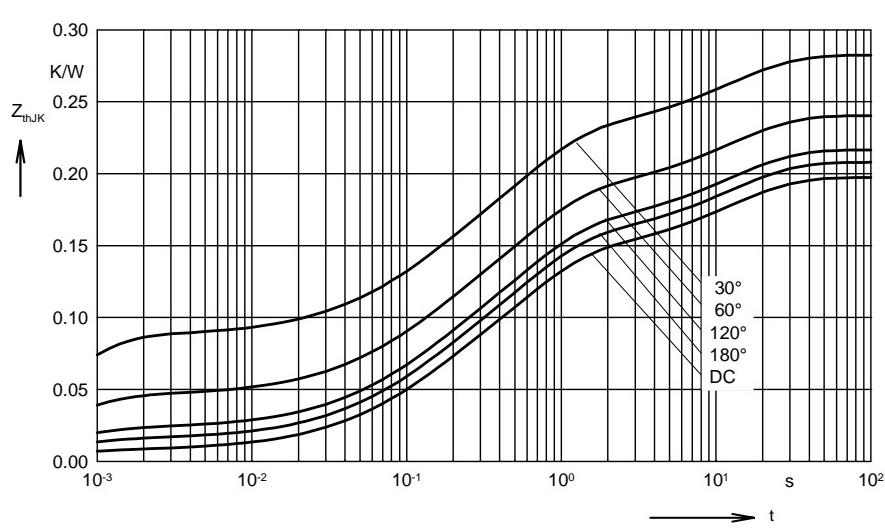
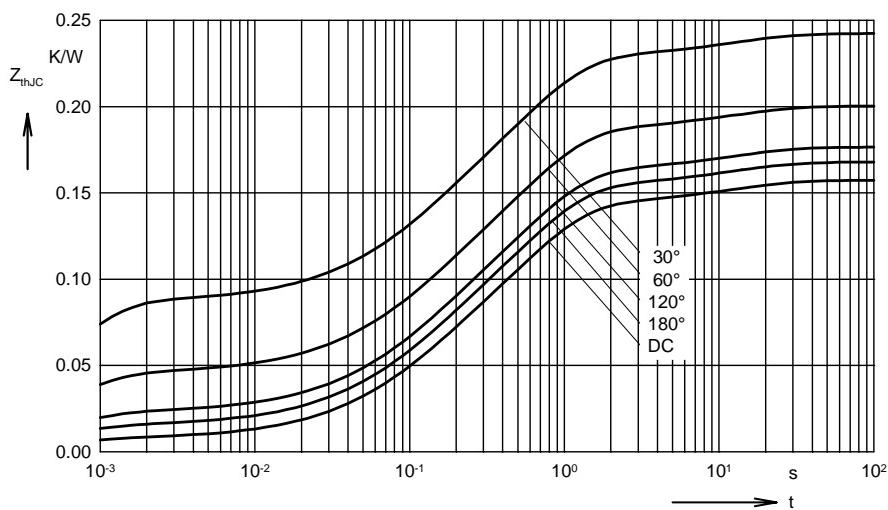
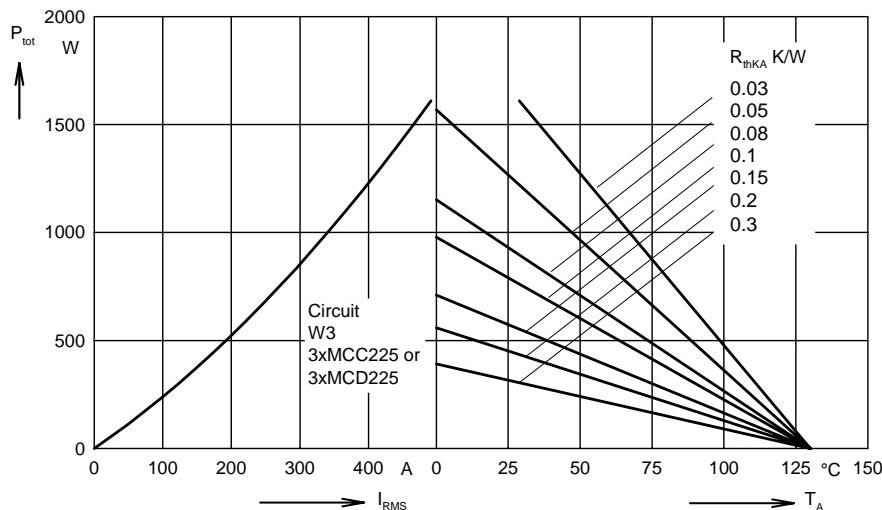


Fig. 8 Transient thermal impedance junction to case (per thyristor or diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.157
180°	0.168
120°	0.177
60°	0.200
30°	0.243

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0076	0.00054
2	0.0406	0.098
3	0.0944	0.54
4	0.0147	12

Fig. 9 Transient thermal impedance junction to heatsink (per thyristor or diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.197
180°	0.208
120°	0.217
60°	0.240
30°	0.283

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0076	0.00054
2	0.0406	0.098
3	0.0944	0.54
4	0.0147	12
5	0.04	12

Copyright © Each Manufacturing Company.

All Datasheets cannot be modified without permission.

This datasheet has been download from :

www.AllDataSheet.com

100% Free DataSheet Search Site.

Free Download.

No Register.

Fast Search System.

www.AllDataSheet.com